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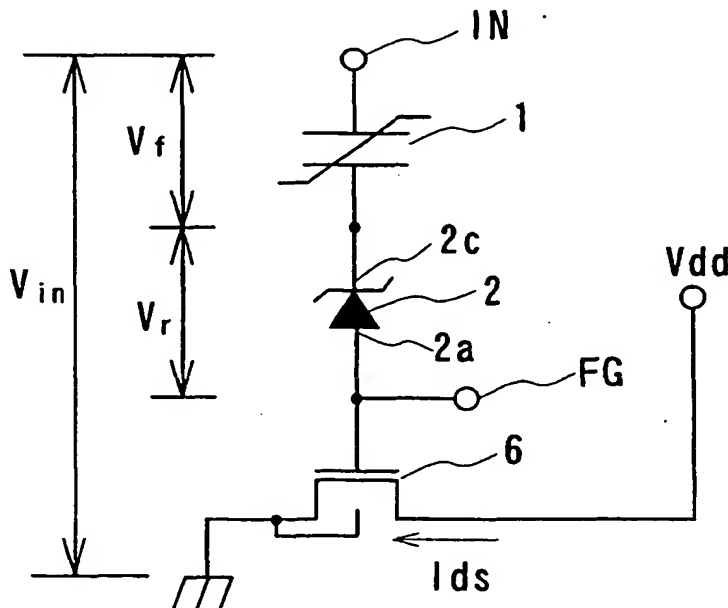
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- (51) 国際特許分類<sup>7</sup>: H01L 27/105, 29/866 (72) 発明者; および  
(21) 国際出願番号: PCT/JP2003/008951 (75) 発明者/出願人(米国についてのみ): 豊田 健治 (TOY-  
(22) 国際出願日: 2003 年 7 月 15 日 (15.07.2003) ODA, Kenji) [JP/JP]; 〒558-0053 大阪府 大阪市 住吉  
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特願2002-213399 2002 年 7 月 23 日 (23.07.2002) JP (74) 代理人: 三枝 英二, 外 (SAEGUSA, Eiji et al.); 〒  
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(54) Title: FERROELECTRIC GATE DEVICE

(54) 発明の名称: 強誘電体ゲートデバイス



(57) Abstract: A ferroelectric gate device includes a ferroelectric capacitor (1), a switch element (2) functioning as a resistor or a capacitor according to a voltage applied, a field effect transistor (6) having a source, drain, and a gate. The ferroelectric capacitor (1) has one end having an input terminal (IN). The other end of the ferroelectric capacitor (1) is connected to one end of the switch element (2). The other end of the switch element (2) is connected to the gate of the field effect transistor (6). When voltage is applied to the input terminal and a voltage equal to or above the coercive voltage ( $V_c$ ) of the ferroelectric substance of the ferroelectric capacitor (1) is applied to the ferroelectric capacitor (1), the switch element (2) functions as a resistor. When voltage is applied to the input terminal and a voltage smaller than the coercive voltage ( $V_c$ ) of the ferroelectric substance of the ferroelectric capacitor

(1) is applied to the ferroelectric capacitor (1), the switch element (2) functions as a capacitor.

(57) 要約: 強誘電体キャパシタ (1) と、印加電圧に応じて抵抗またはキャパシタとして振る舞うスイッチ素子 (2) と、ソース、ドレイン、およびゲートを有する電界効果トランジスタ (6) とを備え、前記強誘電体キャパシタ (1) の一端には入力端子 (IN) が備えられ、前記強誘電体キャパシタ (1) の他端と前記スイッチ素子 (2) の一端とが接続され、前記スイッチ素子 (2) の他端と前記電界効果トランジスタ (6) のゲートとが接続され、前記入力端子に電圧が印加されることにより、前記強誘電体キャパシタ (1) が備えている強誘電体の抗電圧 ( $V_c$ ) 以上の電圧が前記強誘電体キャパシタ (1) に印加されるとき、前記スイッチ素子 (2) は抵抗として振る舞い、前記入力端子に電圧が印加されることにより、前記強誘電体キャパシタ (1) が備えている強誘電体の抗電圧 ( $V_c$ ) よりも小さい電圧が前記強誘電体キャパシタ (1) に印加されるとき、前記スイッチ素子 (2) はキャパシタとして振る舞う強誘電体ゲートデバイス。

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添付公開書類:

一 国際調査報告書

2文字コード及び他の略語については、定期発行される  
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## PATENT COOPERATION TREATY

PCT

NOTIFICATION CONCERNING  
SUBMISSION OR TRANSMITTAL  
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

From the INTERNATIONAL BUREAU

To:

SAEGUSA, Eiji  
Kitahama TNK Building  
1-7-1, Doshomachi, Chuoh-ku  
Osaka-shi, Osaka 541-0045  
Japan



Date of mailing (day/month/year) 29 September 2003 (29.09.03)	
Applicant's or agent's file reference P03-39	IMPORTANT NOTIFICATION
International application No. PCT/JP03/08951	International filing date (day/month/year) 15 July 2003 (15.07.03)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 23 July 2002 (23.07.02)
Applicant MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD. et al	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
3. An asterisk(\*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
23 July 2002 (23.07.02)	2002-213399	JP	29 Augu 2003 (29.08.03)

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer


 Françoise HENNEQUIN (Fax 338 7010)

Facsimile No. (41-22) 338.70.10

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## PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

**PCT**NOTICE INFORMING THE APPLICANT OF THE  
COMMUNICATION OF THE INTERNATIONAL  
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

SAEGUSA, Eiji  
Kitahama TNK Building  
1-7-1, Doshomachi, Chuo-ku  
Osaka-shi, Osaka 541-0045  
JAPON

Date of mailing (day/month/year) 29 January 2004 (29.01.2004)		
Applicant's or agent's file reference P03-39		IMPORTANT NOTICE
International application No. PCT/JP2003/008951	International filing date (day/month/year) 15 July 2003 (15.07.2003)	Priority date (day/month/year) 23 July 2002 (23.07.2002)
Applicant MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD. et al		

1. Notice is hereby given that the International Bureau has **communicated**, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this notice:

AU, AZ, BY, CH, CN, CO, DE, DZ, EP, HU, JP, KG, KR, MD, MK, MZ, RU, TM, US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE, AG, AL, AM, AP, AT, BA, BB, BG, BR, BZ, CA, CR, CU, CZ, DK, DM, EA, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, ID, IL, IN, IS, KE, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MG, MN, MW, MX, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, SC, SD, SE, SG, SK, SL, SY, TJ, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this notice is a copy of the international application as published by the International Bureau on 29 January 2004 (29.01.2004) under No. WO 2004/010503

4. **TIME LIMITS for filing a demand for international preliminary examination and for entry into the national phase**

The applicable time limit for entering the national phase will, **subject to what is said in the following paragraph**, be **30 MONTHS** from the priority date, not only in respect of any elected Office if a demand for international preliminary examination is filed before the expiration of **19 months** from the priority date, but also in respect of any designated Office, in the absence of filing of such demand, where Article 22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see *PCT Gazette* No. 44/2001 of 1 November 2001, pages 19926, 19932 and 19934, as well as the *PCT Newsletter*, October and November 2001 and February 2002 issues.

In practice, **time limits other than the 30-month time limit** will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For **regular updates on the applicable time limits** (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

For filing a **demand for international preliminary examination**, see the *PCT Applicant's Guide*, Volume I/A, Chapter IX. Only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

It is the applicant's **sole responsibility** to monitor all these time limits.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  Gijsbertus Beijer - Carlos Roy
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